



# New records and distribution extensions of some bird species in the Colombian Andean-Orinoco, department of Meta

**Johanna I. Murillo-Pacheco**<sup>1, 2\*</sup> and **Wilian F. Bonilla-Rojas**<sup>1, 3</sup>

1 Universidad de los Llanos, grupo de investigación Biorinoquia, Campus Barcelona Km 12 vía Puerto López, Villavicencio, Colombia

2 Universidad de Alicante, Centro Iberoamericano de la Biodiversidad (CIBIO), Campus San Vicente del Raspeig s/n, Apdo. 99, E-03080, Alicante, Spain

3 Corporación Llanera de Ornitología y de la Naturaleza – KOTSALA, Villavicencio, Meta, Colombia

\* Corresponding author. E-mail: [johannamurillo@gmail.com](mailto:johannamurillo@gmail.com)

**Abstract:** Here we present new records for four bird species to the Andean foothills of the department of Meta in Colombia, and we confirm the occurrence and document range extensions for these in the basin of the Orinoco river. These species are the Pied-billed Grebe, *Podilymbus podiceps* (Linnaeus 1758), the Yellow-chinned Spinetail, *Certhiaxis cinnamomeus* (Gmelin 1788), the Yellow-browed Tyrant, *Satrapa icterophrys* (Viellot 1818), and the Glossy Ibis, *Plegadis falcinellus* (Linnaeus 1766). We also report new sightings of the Prothonotary Warbler, *Protonotaria citrea* (Boddaert 1783), Least Grebe, *Tachybaptus dominicus* (Linnaeus 1766), Oilbird, *Steatornis caripensis* (Humboldt 1817) and Epaulet Oriole, *Icterus cayanensis* (Linnaeus 1766) in the Colombian Andean-Orinoco (Meta department).

**Key words:** aquatic birds; East Andean piedmont; Orinoco basin river region; species confirmation; Villavicencio

The department of Meta is located in central Colombia and corresponds to the westernmost area of the Orinoco River basin region. This is an ecologically important area because of the presence of a variety of different ecosystems, including Andean piedmont forest, savannah and wetlands (Romero et al. 2004). In this department, 831 species of birds have been recorded, which represent 45% of the bird species known to occur in Colombia and more than 90% of the Orinoco basin plains species (Murillo-Pacheco 2008). Due to difficult access and ongoing social conflict prevalent in this area, the fauna of the Orinoco basin in Colombia has been poorly studied (Renjifo et al. 2002; Murillo-Pacheco 2008). Despite the challenges of exploring this area, some bird surveys have been made; however, most efforts have concentrated along accessible roads, rivers, and in urban

areas (Murillo-Pacheco 2008; Umaña et al. 2009).

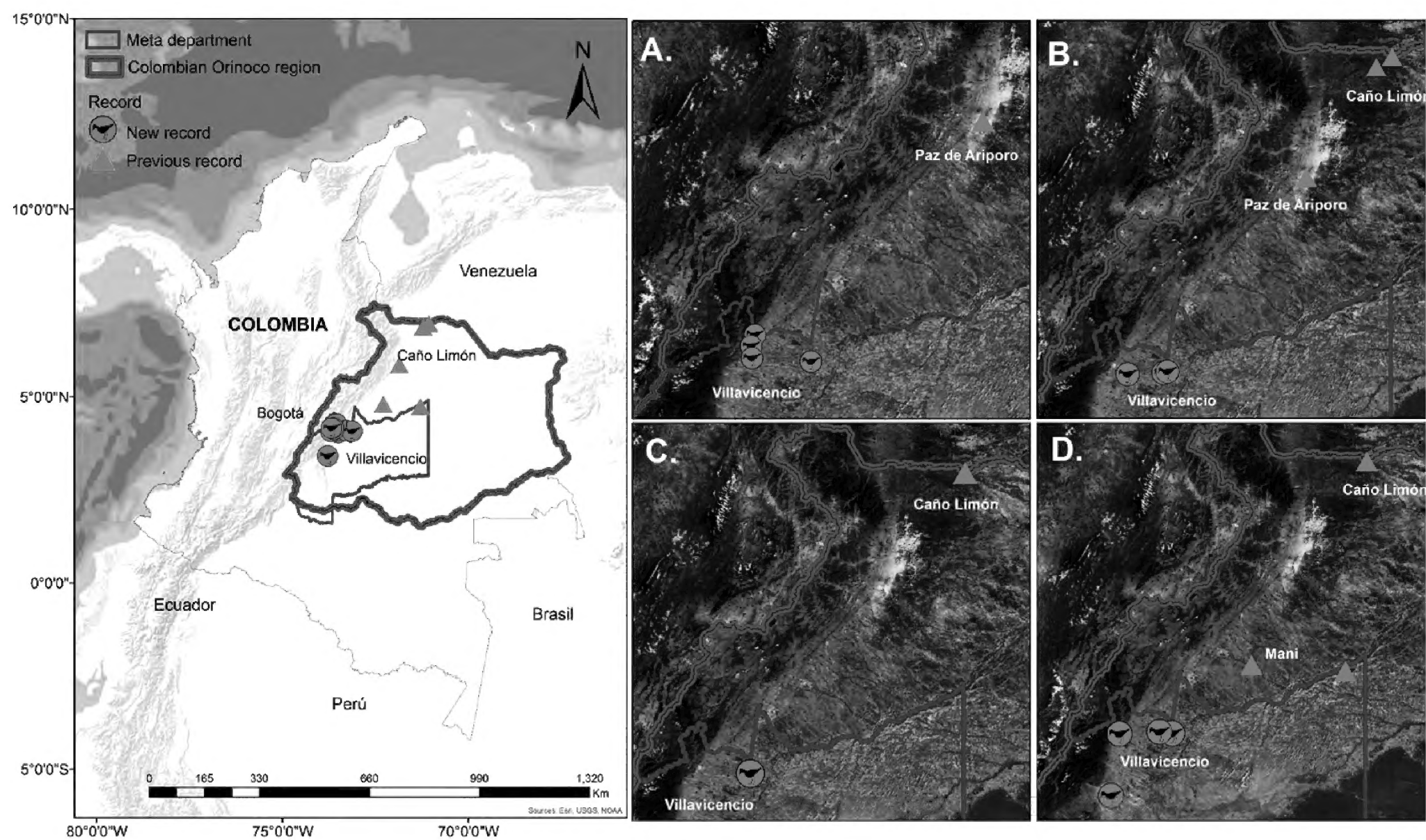
In recent years, ornithological research has increased but the results of studies are seldom published and most of the information is in internal reports, personal lists, and photo galleries. In the Meta department, most projects and studies are conducted by non-governmental organizations (e.g., KOTSALA, Horizonte Verde, and WWF-Colombia), universities (e.g., Universidad de los Llanos and Universidad Nacional de Colombia), private nature reserves (e.g., Rancho Camana, Rey Zamuro, and Unamas), and national protected areas (e.g., Buenavista and Vanguardia), as well as environmental consulting companies required for oil and gas permits. However, the region has large gaps in biodiversity information, including ornithological data (Murillo-Pacheco 2008).

The number of species new to the region has increased due to the confirmation of species such as the Cinereous Becard, *Pachyramphus rufus* (Boddaert, 1783) in Restrepo, San Martin and Puerto Lopez (Garcia and Botero 2013), Yellow-eared Parrot, *Ognorhynchus icterotis* (Massena & Souancé, 1854) in San Luis de Cubarral (Murcia et al. 2009), Red-rumped Woodpecker, *Veniliornis kirkii* (Malherbe, 1845), Emerald-bellied Puffleg, *Eriocnemis alinae* Bourcier, 1842 (Salaman et al. 2002) and Cundinamarca Antpitta, *Grallaria kaestneri* Stiles, 1992 around Guayabetal.

Our study includes information from three sources: field observations, professional bird watchers and data from ornithological collections. During our expeditions conducted from 2008 to 2012 we were able to document range extensions of four species of birds and confirmed the occurrence of four additional species of interest in 11 natural areas and wetlands in the municipalities of Villavicencio, Restrepo and Puerto López in the Piedmont of the department of Meta in Colombia. (Localities are described in Table 1 and depicted in Figure 1.) We included unpublished reports of these species

**Table 1.** Localities with new bird records at Meta, Colombia. Species recorded: 1) Yellow-chinned Spinetail, *Certhiaxis cinnamomeus*; 2) Epaulet Oriole, *Icterus cayanensis*; 3) Pied-billed Grebe, *Podilymbus podiceps*; 4) Glossy Ibis, *Plegadis falcinellus*; 5) Prothonotary Warbler, *Protonotaria citrea*; 6) Yellow-browed Tyrant, *Satrapa icterophrys*; 7) Oilbird, *Steatornis caripensis*; and 8) Least Grebe, *Tachybaptus dominicus*.

Locality	Latitude	Longitude	Altitude (m)	Ecosystem	Species recorded
Alto Buenavista, Buenavista Protected Forest Reserve, Villavicencio	04°10'20.20" N	073°40'28.20" W	1,120–1,250	Forest	2
Lake Barú condominium, km 10 road Puerto López, Villavicencio	04°6'13.79" N	073°34'21.71" W	372	Constructed lake	3
Heron colony La Silvia, Vereda Indultan, Villavicencio	04°11'37.95" N	073°34'49.85" W	233	Swamp	4
Carimata rice farm, Pachaquiario, Puerto López	04°04'02.58" N	073°08'12.84" W	197	Agrosystem - Rice field	1, 3, 4, 5, 6
Providencia rice farm, Pachaquiario, Puerto López	04°04'03.30" N	073°10'01.92" W	206	Agrosystem - Rice field	1
Catatumbo urban wetland, Villavicencio	04°08'04.14" N,	073°37'02.76" W	420	Swamp	8
Katan Fish farm, vereda la Pollata, Villavicencio	04°11'37.95" N	073°34'49.85" W	390	Fish farm	3
Marsella ecotourist farm, km 15 road Puerto López, Villavicencio	04°03'09.91" N	073°29'52.01" W	335	Swamp	1
Acuallanos fish farm, Vereda Caney alto, Restrepo	04°16'39.06" N	073°33'07.74" W	491	Fish farm	3
Arenales fish farm, vereda La Unión, Villavicencio	04°04'04.20" N	073°41'50.17" W	465	Fish farm	4
Pozo azul, Vanguardia Protected Forest Reserve, Villavicencio	04°10'42.79" N	073°37'21.33" W	455	Forest	7



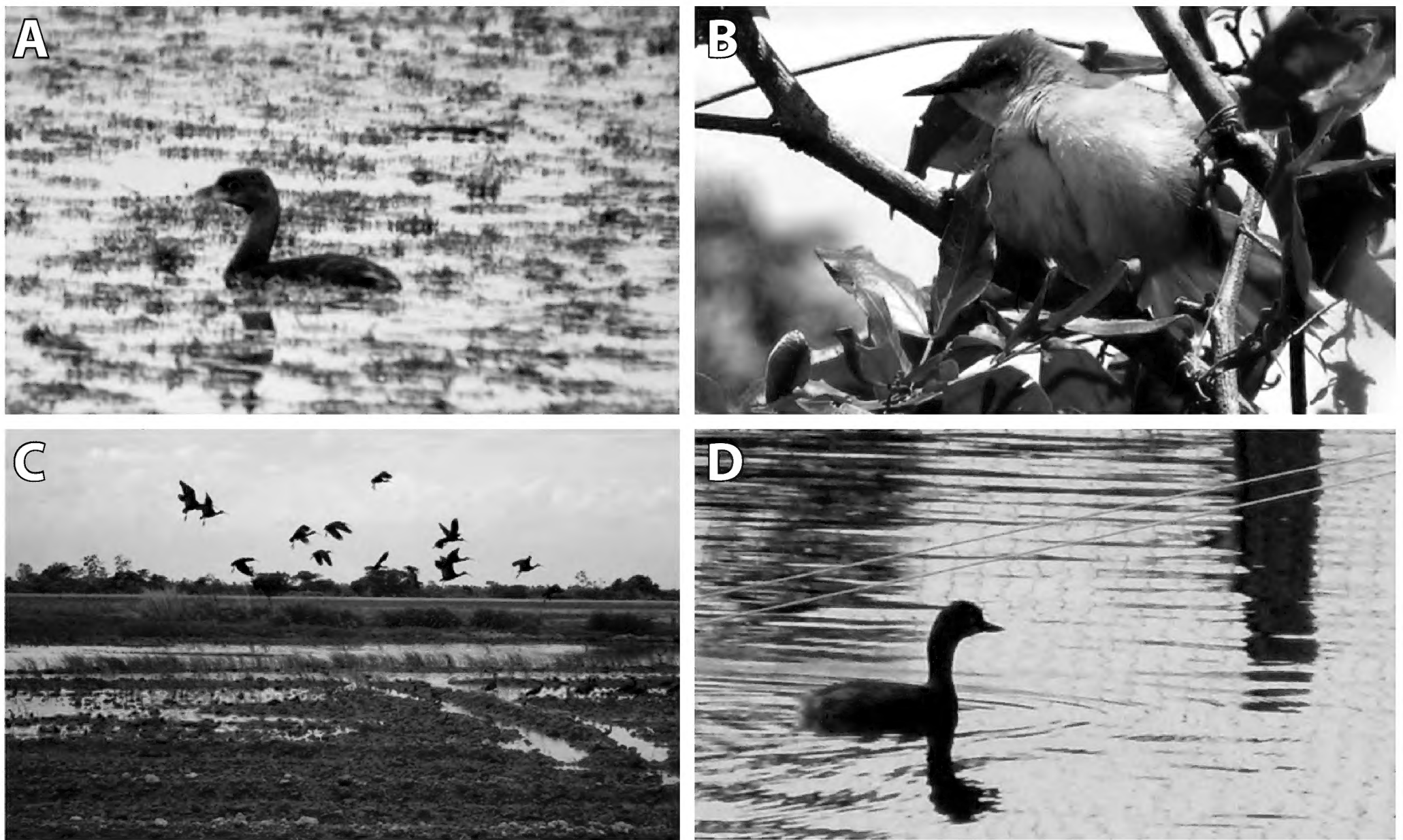
**Figure 1.** Map showing bird records in Colombian Orinoco region and new reports in Meta department. A. Pied-billed Grebe, *Podilymbus podiceps*. B. Yellow-chinned Spinetail *Certhiaxis cinnamomeus*. C. Yellow-browed Tyrant, *Satrapa icterophrys*. D. Glossy Ibis, *Plegadis falcinellus*.

obtained from observations made by the professional bird watchers: Jorge Botero Echeverri (JB), Katherine Certuche (KC), Daniel Piedrahita (DP), Johanna Zuluaga (JZ), Thomas McNish (TM), and Francisco Castro (FC). These two sources of information (field observations and reports from professional watchers) were direct observations performed with the aid of binoculars, telescopes, and some, with the naked eye. We also included records of specimens from national ornithological collections (Instituto de Ciencias Naturales [ICN] and IAvH-A- Instituto de investigación de recursos biológicos Alexander von Humboldt [IAvH-A]), as well as international collections (Field Museum of Natural

History [FMNH] and Muséum National d'Histoire Naturelle [MNHN]). Lastly, we reviewed thematic bibliography to confirm the species distribution (Meyer de Schauensee 1951; Hilty and Brown 2001; McNish 2007) and previous records.

Pied-billed Grebe, *Podilymbus podiceps* (Linnaeus, 1758). This species was previously recorded in the Andean, Caribbean and Pacific regions of Colombia (Hilty and Brown 2001). According to McNish (2007), it was also probably found in the Orinoco Region, which was recently confirmed by the sighting of an individual in Orocué, Casanare (Ruiz 2014). We observed this grebe in four locations of Meta department along a





**Figure 2.** Confirmation new reports in Meta department. **A:** Pied-billed Grebe, *Podilymbus podiceps* in lagoon rice farm Carimata, Puerto López, Meta, Colombia (16 March 2008). **B:** Yellow-chinned Spinetail, *Certhiaxis cinnamomeus*, in edge vegetation in lagoon rice farm Carimata, Puerto López, Meta, Colombia (18 February 2010). **C:** Glossy Ibis, *Plegadis falcinellus*, in crop of rice farm Carimata, Puerto López, Meta, Colombia (16 February 2008). **D:** Least Grebe, *Tachybaptus dominicus*, foraging in a pond at the Acuallos fish farm, Restrepo (15 March 2011).

250 ± 18 km line from Casanare (Figure 1A), in the following locations: 1) Carimata lagoon at a rice farm (Puerto López) on 9 and 22 February 2008 and on 9 and 16 March 2008; 2) in a pond at the Acuallos fish farm (Restrepo) on 20 March 2012; 3) in a lake water mirror at the abandoned Katan fish farm (Villavicencio) on 20 April 2011 and 11 January 2012 and finally; 4) at Barú artificial lake (Villavicencio) on the 9 January 2012. These observations are the first documented records of this species in the Meta department and represent the confirmation of the occurrence of the species in the Colombian Orinoco River basin region. This species was observed diving and foraging alone in shallow lakes (ca. 1 m deep). Even though these ponds are artificial wetlands, they exhibited little human disturbance associated with their use and had high vegetation cover in their surroundings (Figure 2A).

Yellow-chinned Spinetail, *Certhiaxis cinnamomeus* (Gmelin, 1788). This species has been recorded in the Orinoco region in the Arauca department (Mckay and Jorgenson 1979; McNish et al. 1992; Hilty and Brown 2001; Ridgely and Tudor 2009), with multiple observations in Caño Limón (TM) and the Estero El Lipa (KC); in the Casanare department at Paz de Ariporo (IAvH-A-13690, 13756, 13757; Acevedo et al. 2014) and only one new record in the department of Meta at the

Mozambique Lagoon in Puerto López (DP). We watched single individuals and groups of up to four individuals in three locations in the Meta department along lines of 260 ± 18 km from Casanare and 400 ± 12 km from Arauca (Figure 1B). The first location consisted in a vegetated area located along the lagoon in the Carimata rice farm (Puerto López) with observations of the species on the following dates: 16 and 30 March 2008, 18 February 2010, 6 June 2011, 10 October 2011, and 18 December 2011. The second site was an area with herbaceous vegetation in irrigation channels of the rice fields of Providencia farm (Puerto López) with observations on 19 June 2010, 10 February 2011, and 18 November 2011 (Figure 2B). The last site was located in swamp vegetation of the tourist farm Marsella (Villavicencio) on 6 January 2012. These records confirm the distribution of this species in the Meta department. However, we believe this species could be common in other wetlands and in the Piedmont area. We consider that this species shows fidelity to the habitat because it was observed in the same places in different visits.

Yellow-browed Tyrant, *Satrapa icterophrys* (Vieillot, 1818). The only reliable reports of this species in Colombia are from Caño Limón, in Arauca (McNish et al. 1992; Rojas et al. 1997; Rojas and Piragua 2000). Surprisingly, we observed one individual of this species

foraging for insects at the Carimata rice farm (Puerto López) in the vegetation surrounding a rice irrigation channel on 9 February 2008. This farm is located 407 km west from Caño Limón (Figure 1C) and this record represents a range extension to Meta department.

Glossy Ibis, *Plegadis falcinellus* (Linnaeus, 1766). This species is distributed in Colombia from the Caribbean coast at the Guarajo lagoon to the southwestern of the Atlántico department and south to the Magdalena valley (Hilty and Brown 2001). In Colombia, this species has been characterized for having latitudinal and cross-border migration (Fierro 2009; Fierro 2012) and in the Venezuelan Orinoco region it has been reported in Apure, Barinas, Portuguesa and Guarico (McNish 2007). Records in Colombia are confined to Caño Limón in Arauca (McNish 2007), Orocué (JB) and Maní (JZ) in Casanare, Puerto Carreño in Vichada (FC) and in the Meta department with records of three individuals in the Manoa trail (Puerto López) near Caño Montearaco in December 2009 (JZ). Recently, Ruiz et al. (2014) and Acevedo et al. (2014) recorded the species in flooded savannah of Meta and Casanare, but they did not specify the locations or any additional details. We observed this species in the Meta department (Figure 1D) in groups of 8–200 individuals on 2 and 16 February 2005, and 2, 9, 16, 23 and 30 March 2008 in the Carimata and Providencia rice farms (Puerto López). In addition, we watched 32 individuals in the Trocha 11 (Granada) in February 2008. Most of these individuals were found foraging in the muddy ground during the early growth stages of rice fields (Figure 2C). In the other locations, three individuals of Glossy Ibis were watched in the heron rookery at La Silvia (Villavicencio) on 10 December 2011 and five additional individuals on arboreal vegetation at the Arenales fish farm (Villavicencio) on 15 June 2011. These records confirm the presence of this species in the Meta Department and the Colombian Orinoco River basin. We added the specific locations where individuals were recorded and noted that the species congregates in rice agro-ecosystems specifically during dry season (December to March) which matches the species migration time.

Prothonotary Warbler, *Protonotaria citrea* (Boddaert, 1783). This warbler is considered a species of conservation interest at the national and continental level in the United States (USFWS 2002; Dunn et al. 2005). In Colombia, it is categorized as a winter migratory species with permanent breeding populations and latitudinal and cross-border movements (Morales and Cifuentes 2012). This species breeds throughout much of the eastern and northern U.S. and southwestern Ontario, Canada. One specimen has been recorded in Arauca (ICN 38756) and there are historic records in Villavicencio in the Meta department (Ridgely and Tudor 1989; Hilty and Brown 2001). We recorded Prothonotary Warbler

in January 2005, 2008 and 2011, foraging on bushes along the irrigation canals of the Carimata rice farm (Puerto López), during the time that corresponds to its migration to the tropics. These records confirm this species' occurrence in Meta department and indicate a migration path that stretches from the Andes to the Orinoco low lands. Furthermore, our observations are congruent with previous records showing that the species is mostly associated with bodies of water and swamps in Colombia (Hilty and Brown 2001; Fundación Proaves 2009; Morales and Cifuentes 2012). We believe our records are of additional interest as there is lack of earlier records from rice agro-ecosystems.

Least Grebe, *Tachybaptus dominicus* (Linnaeus, 1766). This species has been reported in the department of Arauca at Caño Limón (McNish et al. 1992; Rojas and Piragua 2000) and there is a historical sighting for Villavicencio with a specimen collected in 1929 (MNH CG1941.52). We observed one individual on 20 July 2010 that was foraging in the Catatumbo urban wetland in Villavicencio. The lake depth was less than a meter and it was located in an urban area. This is the only water mirror within the city. An individual was also observed foraging in a pond at the Acuellanos fish farm, Restrepo on 15 March 2011 (Fig. 2D). These reports confirm the presence of the Least Grebe in the department of Meta.

Oilbird, *Steatornis caripensis* von Humboldt, 1817. In Meta, this species has been reported in the municipalities of Restrepo (ICN 25125-27), Cumaral, La Uribe (Apolinar 1913) and San Juan de Arama (Alianza BioMap 2006), la Macarena (FMNH 248556; Blake 1962) and in Tinigua National Park (Cadena et al. 2000). We found one dead bird in June 2006 at the Vanguardia Reserve in Pozo Azul. Local people reported a colony of Oilbirds at this location but we were unable to confirm these reports. This record confirms the species presence in Villavicencio.

Epaulet Oriole, *Icterus cayanensis* (Linnaeus, 1766). Previous reports documented the species at altitudes ranging between 450 and 1,000 m above sea level in the Ocoa River in Villavicencio (Meyer de Schauensee 1951), Guatiquia River and Restrepo (FG), Halcón Dorado Natural Reserve (Salaman et al. 2009), and Acacias (Salaman et al. 2002), Granada, Puerto Gaitán and San Martín (Alianza BioMap 2006) and in Tinigua National Park (Cadena et al. 2000). However, we recorded the Epaulet Oriole at an elevation of 1,250 m at Alto de Buenavista (Buenavista Reserve) in Villavicencio on December of 2008. This record is an elevational extension for Meta and the Orinoco region. This species frequents gardens as well as artificial fruit (banana) bird feeders placed by local people.

The piedmont of the Andean Orinoco in the department of Meta is of high importance for birds mostly because it is a transition zone between the



Llanos, the Andean mountains and northern Amazonia. We believe that there is great potential for finding new bird records if bird studies (inventories and monitoring) were extended to unexplored areas such as the base of the Sierra de la Macarena, forested areas distant from urban settlements, and in particular, places at elevations exceeding 600 m, and during migratory seasons. Conducting bird surveys in other landscapes, such as complex wetlands and agro-ecosystems found all over the region, could also add to our current ornithological knowledge. Finally, it is important to mention that all the recorded species in this study are listed globally as Least Concern (LC) in the IUCN Red List (BirdLife International 2014). Nevertheless, they are not included in any threaten category in Colombia where there is a lack of local vulnerability studies.

Despite the regional bird surveying efforts in Meta department (concentrated in the Villavicencio municipality and surrounding area; Murillo 2008), there is still a great potential for adding to the knowledge of the avifauna of this region as it represents an ecotone where the Andean, Amazonian, Guyanese and Llanos Savannahs regions converge. The foothills region (denominated by the Meta Piedmont District; Hernández et al. 1992a), is highly diverse because it is a wet Pleistocene refuge (Hernández et al. 1992b).

## ACKNOWLEDGEMENTS

We are grateful to all the people that have collaborated on getting these records, especially to the members of the Corporación Llanera de Ornitología y de la Naturaleza — KOTSALA who participated during the exploration visits, and the private landowners who allowed us to access their land, in particular to Jairo Miranda and family in Buenavista. Also to Jorge Botero Echeverri (JB), Katherine Certuche (KC), Daniel Piedrahita (DP), Johanna Zuluaga (JZ), Thomas McNish (TM) and Francisco Castro (FC) for contributing species' records. We thank Ramsar Convention (WWF/09/CO/5), COL-CIENCIAS (Convocation 512/2010), Fundación Carolina and Colfuturo for their financial support. We would like to thank Maria Angela Echeverry and anonymous reviewers for their manuscript comments and valuable suggestions. Also, to Liliana Ibañez and Nalleli Carvajal for her English review.

## LITERATURE CITED

- Acevedo, O.A., A. Pinto and J.O. Rangel. 2014. Las Aves de la Orinoquia colombiana: una revisión de sus registros; pp. 691-750, in: J.O. Rangel (Ed.). Colombia diversidad biótica XIV, La región de la Orinoquia de Colombia. Bogotá: Universidad Nacional de Colombia
- Alianza BioMap. 2006. Base de Datos Darwin: Proyecto BioMap base de datos de distribución de la avifauna Colombiana. Accessed at <http://www.biomap.net>, 25 November 2006.
- Apolinar, M. 1913. *Steatornis caripensis* de Humb. Boletín de la Sociedad de Ciencias Naturales del Instituto de la Salle 1(4): 101-104.
- BirdLife International. 2014. The BirdLife checklist of the birds of the world, with conservation status and taxonomic sources. Version 3. Accessed at [http://www.birdlife.info/docs/SpcChecklist/Checklist\\_v3\\_June10.zip](http://www.birdlife.info/docs/SpcChecklist/Checklist_v3_June10.zip), 10 March 2014.
- Blake, E.R. 1962. Birds of the Sierra Macarena, eastern Colombia. Fieldiana Zoologia 44: 69-112. <https://ia802708.us.archive.org/30/items/birdsofsierramac4411blak/birdsofsierramac4411blak.pdf>
- Cadena, C.D., M. Álvarez, J.L. Parra, I. Jiménez, C.A. Mejía, M. Santamaría, A.M. Franco, C.A. Botero, G.D. Mejía, A.M. Umaña, A. Calixto, J. Aldana and G.A. Londoño. 2000. The birds of CIEM, Tinigua National Park, Colombia: an overview of 13 years of ornithological research. Cotinga 13: 46-54. <http://www.neotropicalbirdclub.org/wp-content/uploads/2016/02/Cotinga-13-2000-46-54.pdf>
- Dunn, E.H., B.L. Altman, J. Bart, C.J. Beardmore, H. Berlanga, P.J. Blancher, G.S. Butcher, D.W. Demarest, R. Dettmers, W. C. Hunter, E. E. Inigo-Elias, A. O. Panjabi, D. N. Pashley, C. J. Ralph, T. D. Rich, K. V. Rosenberg, J. M.R. Rustay and T.C. Will. 2005. High priority needs for range-wide monitoring of North American landbirds. Partners in Flight Technical Series No. 2. Accessed at <http://www.partnersinflight.org/pubs/ts/02-MonitoringNeeds.pdf>, 20 March 2013.
- Fierro, K. 2009. Aves Migratorias en Colombia; pp. 63-75, in: L.G. Naranjo and J.D. Amaya (eds.). Plan Nacional de las Especies Migratorias: Diagnóstico e identificación de acciones para la conservación y el manejo sostenible de las especies migratorias de la biodiversidad en Colombia. Bogotá: Ministerio de Ambiente, Vivienda y Desarrollo Territorial.
- Fierro, E. 2012. Plegadis falcinellus; pp. 124-126, in: L.G. Naranjo, J.D. Amaya, D. Eusse-González and Y. Cifuentes-Sarmiento (eds.). Guía de las Especies Migratorias de la Biodiversidad en Colombia. Aves. Volume 1. Bogotá: Ministerio de Ambiente y Desarrollo Sostenible.
- Fundacion ProAves. 2009. Plan para la Conservación de las aves migratorias en Colombia Conservación Colombia. 11: 1-154. <http://www.proaves.org/images/stories/IMG/pdf/CC11-4.pdf>
- García, J.M. and E. Boterollo. 2013. Nuevos registros de distribución del Cabezón Cinéreo (*Pachyramphus rufus*) en Colombia. Ornitología Colombiana 13: 69-73. <http://asociacioncolombianadeornitologia.com/wp-content/uploads/2013/10/MS1024.pdf>
- Hernández, J., A. Hurtado, R. Ortiz and T. Walschburger. 1992a. Unidades biogeográficas de Colombia; pp. 105-152, in: G. Halffter (Ed.). La diversidad biológica de Iberoamérica. Acta zoológica mexicana, Volumen Especial, Xalapa: Instituto Mexicano de Ecología A. C.
- Hernández, J., T. Walschburger, R. Ortiz and A. Hurtado. 1992b. Origen y distribución de la biota suramericana y colombiana; pp. 55-104, in: G. Halffter (ed.). La diversidad biológica de Iberoamérica. Acta zoológica mexicana, Volumen Especial, Xalapa: Instituto Mexicano de Ecología A. C.
- Hilty, S.L. and W.L. Brown. 2001. Guía de las aves de Colombia. Princeton: American Bird Conservancy, Imprelibros S. A., Princeton Polychrome Press. 1030 pp.
- Meyer de Schauensee, R. 1951. The birds of the Republic of Colombia (cuarta entrega: Alaudidae-Fringillidae). Caudasia 5(25): 873-1112. <http://www.bdigital.unal.edu.co/33106/1/32877-121812-1-PB.pdf>
- Mckay, W.D. and J.P. Jorgeson. 1979. Observations on birds at Hato Veneno, Arauca, Colombia. [unpublished report]. Villavicencio, Colombia: INDERENA. 72 pp.
- McNish, T. and F.G. Stiles. 1992. Aves del Llano. Bogotá: Villegas Editores. 95 pp.
- McNish, T. 2007. Las aves de los Llanos Orientales de Colombia. Bogotá: M y B. 302 pp.
- Morales, A. and Y. Cifuentes-Sarmiento. 2012. Protonotria citrea; pp. 586-587, in: L.G. Naranjo, J.D. Amaya, D. Euse and Y. Cifuentes (eds.). Guía de las Especies Migratorias de la Biodiversidad

- en Colombia, Aves. Vol. 1. Bogotá: Ministerio de Ambiente y Desarrollo Sostenible.
- Murcia, M.A., D. Beltrán and L. Carvajal. 2009. Un nuevo registro del Loro Orejiamarillo (*Ognorhynchus icterotis*: Psittacidae) en la Cordillera Oriental Colombiana. *Ornitología Colombiana* 8: 94–99. <http://asociacioncolombianadeornitologia.com/wp-content/uploads/revista/oc8/Murcia.pdf>
- Murillo-Pacheco, J.I. 2008. Evaluación de la distribución y estado actual de los registros ornitológicos de los Llanos Orientales de Colombia. Resumen tesis. *Ornitología Colombiana* 7: 94. <http://asociacioncolombianadeornitologia.com/wp-content/uploads/revista/oc7/TESIS.pdf>
- Renjifo, L.M., A.M. Franco-Maya, J.D. Amaya-Espinel, G.H. Kattan and B. López-Lanús. 2002. Libro rojo de aves de Colombia. Bogotá: Instituto Alexander von Humboldt. 554 pp.
- Ridgely, R.S. and G. Tudor. 1989. The birds of South America: The Oscine Passerines. Volume I. Austin: University of Texas Press. 596 pp.
- Ridgely R.S. and G. Tudor. 2009. Field guide to the songbirds of South America: the passerines. Austin: University of Texas Press. 750 pp.
- Rojas, R., W. Piragua, F.G. Stiles and T. McNish. 1997. Primeros registros para Colombia de cuatro especies de la familia Tyrannidae. *Caldasia* 19(3): 523–525. <http://www.bdigital.unal.edu.co/21174/1/17462-55541-1-PB.pdf>
- Rojas, R. and W. Piragua. 2000. Afinidades biogeográficas y aspectos ecológicos de la avifauna de Caño Limón, Arauca, Colombia. *Crónica forestal y del Medio Ambiente* 15(1): 1–26. <http://www.redalyc.org/pdf/113/11315107.pdf>
- Romero, M., G. Galindo, J. Otero and D. Armenteras. 2004. Ecosistemas de la cuenca del Orinoco Colombiano. Bogotá: Instituto de Investigaciones en Recursos Biológicos Alexander von Humboldt / Instituto Geográfico Agustín Codazzi. 189 pp.
- Ruiz, C., D. Eusse and C. Arango. 2014. Distribución, abundancia y reproducción de las aves acuáticas de las sabanas inundables de Meta y Casanare (Colombia) y sitios prioritarios para la conservación. *Biota Colombiana* 15(Suppl. 1): 137–160.
- Salaman, P. G., F. G. Stiles, C. I. Bohórquez, M. Álvarez, A. M. Umaña, T. M. Donegan and A. M. Cuervo. 2002. New and noteworthy bird records from the east slope of the Andes of Colombia. *Caldasia* 24(1): 157–189. <http://www.bdigital.unal.edu.co/37615/1/39439-175493-1-PB.pdf>
- Salaman, P., T. Donegan and D. Caro. 2009. Estado de las aves de Colombia 2009. *Conservación Colombiana* 8: 1–89. Accessed at [http://www.proaves.org/wpcontent/uploads/2010/04/Aves\\_de\\_Colombia\\_2009.pdf](http://www.proaves.org/wpcontent/uploads/2010/04/Aves_de_Colombia_2009.pdf), 10 March 2016.
- Umaña, A.M., J.I. Murillo, S. Restrepo and M. Álvarez. 2009. Capítulo 2: Estado de la biodiversidad en el área de estudio a nivel de especies – Aves; pp. 51–83, in: M.H. Romero., J.A. Maldonado, J.D. Bogotá, J.S. Usma, A.M. Umaña, J.I. Murillo, S. Restrepo, M. Álvarez, M.T. Palacios, M.S. Valbuena, S.L. Mejía, J. Aldana and E. Payán (eds.). Informe sobre el estado de la biodiversidad en Colombia 2007–2008: piedemonte orinoquense, sabanas y bosques asociados al norte del río Guaviare. Bogotá: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt. 151 pp. Accessed at [http://www.humboldt.org.co/es/test/item/download/128\\_22e55a89599855c73ee2697e5174fcb2](http://www.humboldt.org.co/es/test/item/download/128_22e55a89599855c73ee2697e5174fcb2).
- USFWS (United States Fish and Wildlife Service). 2002. Birds of conservation concern division of migratory bird management, Arlington, Virginia. 99 pp. Accessed at <http://migratorybirds.fws.gov/reports/bcc2002.pdf>, 10 March 2013.

**Author contributions:** JMP and WBR collected the data, take the pictures and wrote the paper

**Received:** 30 March 2014

**Accepted:** 15 March 2016

**Section Editor:** Thiago V. V. Costa